CHAPTER 4.0
COMPARISON OF ALTERNATIVES

4.1 INTRODUCTION

This chapter compares the alternatives described in Chapter 2 and evaluated in Sections 3.1 through 3.16. Both CEQA and NEPA require analysis of a reasonable range of alternatives. Accordingly, this draft EIR/EIS analyzes alternatives that feasibly meet the objectives of the proposed project, along with the No Project Alternative (CEQA) and the No Federal Action Alternative (NEPA). Each alternative is analyzed in equal level of detail. This level of analysis is included to provide sufficient information and meaningful detail about the environmental effects of each alternative so that informed decision-making can occur.

As described in Chapter 2, the proposed project has two components: (1) restoration of San Elijo Lagoon and (2) materials disposal/reuse of dredged materials from the lagoon. These project components were analyzed independently from one another throughout the EIR/EIS, where appropriate. The lagoon restoration alternatives include:

- Alternative 2A
- Alternative 1B
- Alternative 1A
- No Project/No Federal Action Alternative

The materials disposal/reuse scenarios are described in Chapter 2, Table 2-20. They include options for materials placement either offshore, nearshore, or onshore and are dependent on the volume and quality of material.

Other alternatives that were considered but eliminated during the alternatives screening process are summarized in Section 2.2.2.

4.2 EVALUATION OF ALTERNATIVES

CEQA

The CEQA Guidelines (14 CCR Section 15126.6) require that an EIR present a range of reasonable alternatives to the project, or to the location of the project, that would feasibly attain most of the basic project objectives but would avoid or substantially lessen any significant

effects of the project. Section 15126.6 of the CEQA Guidelines also requires an evaluation of the comparative merits of the alternatives. An EIR is not required to consider alternatives that are infeasible.

Table 4-1 summarizes the results of the CEQA impact analysis for each resource area.

Table 4-1
CEQA Significance Conclusions by Alternative

Environmental Resource Area	Alternative 2A		Alternative 1B		Alternative 1A		No Project/No Federal Action	
	LR	MP	LR	MP	LR	MP	LR	MP
Land Use/Recreation	L	L	L	L	L	L	L	L
Hydrology	L	N	L	N	L	N	L	N
Oceanography/Coastal Processes	L	L	L	L	L	L	L	L
Water and Aquatic Sediment Quality	M	L	M	L	M	L	L	L
Geology/Soils	M	L	L	L	L	L	N	N
Biological Resources	S	L	S	L	S	L	L	L
Cultural Resources	M	N	M	N	M	N	N	N
Paleontological Resources	M	N	M	N	M	N	N	N
Visual Resources	S	L	S	L	L	L	N	N
Traffic, Access, and Circulation	S	L	S	L	S	L	N	N
Air Quality	S	–	S	–	S	–	L	–
Noise	S	S	S	S	S	L	N	N
Socioeconomics/Environmental Justice	L	L	L	L	L	L	N	N
Public Services and Utilities	L	L	L	L	L	L	N	N
Hazardous Materials and Public Safety	M	L	M	L	M	L	L	L
Global Climate Change and Greenhouse Gas Emissions	S	–	S	–	S	–	L	–

LR = Lagoon Restoration
MP = Materials Placement
S = Significant unavoidable impact
M = Significant but mitigable to less than significant impact
L = Less than significant impact
N = No impact
– = Lagoon restoration and materials disposal/reuse analyzed together

NEPA

NEPA (40 CFR Section 1502.14[a]) requires that an EIS explore and evaluate a range of reasonable alternatives to the project. The CWA Section 404(b)(1) Guidelines (40 CFR Part 230) also address alternatives, stating that no discharge of dredged or fill material will be permitted if there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem, so long as that alternative does not have other significant adverse environmental consequences. Chapter 2 of this draft EIR/EIS sets forth potential alternatives to the recommended plan, and Sections 3.1 through 3.16 evaluate their environmental impacts.

Table 4-2 summarizes potential adverse effects identified per NEPA for each resource area.

Table 4-2
NEPA Conclusions by Alternative

Environmental Resource Area	Alternative 2A		Alternative 1B		Alternative 1A		No Project/No Federal Action	
	LR	MP	LR	MP	LR	MP	LR	MP
Land Use/Recreation	N	N	N	N	N	N	N	N
Hydrology	N	N	N	N	N	N	N	N
Oceanography/Coastal Processes	N	N	N	N	N	N	N	N
Water and Aquatic Sediment Quality	N	N	N	N	N	N	N	N
Geology/Soils	N	N	N	N	N	N	N	N
Biological Resources	A	N	A	N	A	N	N	N
Cultural Resources	N	N	N	N	N	N	N	N
Paleontological Resources	N	N	N	N	N	N	N	N
Visual Resources	A	N	A	N	N	N	N	N
Traffic, Access, and Circulation	A	N	A	N	A	N	N	N
Air Quality	N	–	N	–	N	–	N	–
Noise	N	N	N	N	N	N	N	N
Socioeconomics/Environmental Justice	N	N	N	N	N	N	N	N
Public Services and Utilities	N	N	N	N	N	N	N	N
Hazardous Materials and Public Safety	A	N	A	N	A	N	N	N
Global Climate Change and Greenhouse Gas Emissions	N	–	N	–	N	–	N	–

LR = Lagoon Restoration
MP = Materials Placement
A = Substantial adverse effect
N = No substantial adverse effect
– = Lagoon restoration and materials disposal/reuse analyzed together

4.3 ANALYSIS OF IMPACTS OF ALTERNATIVES

Overall, less than significant impacts or impacts that can be mitigated to less than significant under CEQA for all alternatives include land use/recreation, hydrology, oceanography/coastal processes, water and aquatic sediment quality, geology/soils, cultural resources, paleontological resources, socioeconomics/environmental justice, public services and utilities, and hazardous materials and public safety. Exceptions include the significant and unavoidable impacts that would occur for biological resources; visual resources; traffic, access, and circulation; noise; air quality; and global climate change and GHG emissions as detailed in Section 4.3.1 below. Substantial adverse impacts identified under NEPA include biological resources; visual resources; traffic, access and circulation; and hazardous materials and public safety. Mitigation is proposed for all substantial adverse impacts that would occur.

When comparing the lagoon restoration component and the materials disposal/reuse component of the SELRP, significant and substantial adverse impacts only occur as a result of the lagoon restoration actions for Alternative 2A, Alternative 1B, and Alternative 1A. Under all alternatives, the materials disposal/reuse activities would result in less than significant impacts with no mitigation required, and no substantial adverse impacts would occur.

4.3.1 RESOURCES WITH SIGNIFICANT UNAVOIDABLE IMPACTS

Biological Resources

Restoration construction would result in greater than 50 percent temporal loss of sensitive habitats including coastal salt marsh (low- and mid-), open water, saltpan/open water, and tidal mudflats. Because the temporal loss of these habitats may threaten local populations of sensitive resident species, this short-term direct impact is considered significant and adverse. Additionally, significant short-term impacts were identified for Alternative 2A and Alternative 1B to Belding's savannah sparrow, due to the temporary loss of greater than 50 percent of their nesting habitat. While no feasible mitigation is available for the short-term direct loss of the nesting habitat and the impact would remain significant, the project is self-mitigating as the overall ecological benefits from lagoon restoration would provide long-term improved habitat quality.

Significant and unavoidable short-term noise impacts to sensitive bird species would occur as a result of construction activities under Alternative 2A, Alternative 1B, and Alternative 1A. When in proximity to wildlife, the effects of dredge and other construction noise may disrupt sensitive birds foraging or breeding behavior. The dredge is slow and would be operating in one basin at a time; as such, most birds could relocate to quieter habitat. However, relocation during the breeding season is not feasible for nesting birds and, even with the numerous project design features to reduce noise levels, this is considered a significant and unavoidable impact.

Visual Resources

Significant and unavoidable long-term visual impacts would result from the new inlet and CBFs on either side as proposed for Alternative 2A. The permanent inlet features would introduce highly linear elements into the beach landscape that would result in a substantial contrast from the existing visual environment and beach character for sensitive beachgoers. This significant unavoidable visual impact would only occur with implementation of Alternative 2A as Alternative 1B, Alternative 1A, and the No Project/No Federal Action Alternative would not include construction of a new inlet and CBFs.

Significant and unavoidable temporary visual impacts would result from the change in visual quality and character of the lagoon for key viewers during construction of Alternative 2A and Alternative 1B. Vegetation would be removed from a large portion of the central basin and substantial landform alteration would occur along with the presence of construction equipment and lighting. Such activities would be temporary but highly visible because of the contrast in color and texture with vegetation being replaced by exposed soil. This significant unavoidable visual impact would only occur with implementation of Alternative 2A and Alternative 1B as Alternative 1A and the No Project/No Federal Action Alternative would not include as extensive a visual change during lagoon restoration.

Traffic, Access, and Circulation

Significant and unavoidable temporary traffic impacts would result during Coast Highway 101 bridge construction under Alternative 2A and retrofitting under Alternative 1B and Alternative 1A. The significant traffic impacts would occur along segments of Coast Highway 101 and Lomas Santa Fe during construction or retrofitting activities that require restriction of the bridge to two lanes of traffic. These impacts would be temporary, occurring only during new bridge construction or retrofitting activities that require lane closure on the roadway. Traffic would return to normal operating conditions once all four lanes of traffic were fully operational. No other component of the proposed lagoon restoration or materials disposal/reuse would result in significant traffic impacts. All mitigation options were considered and feasible mitigation is included but would not reduce the impact to less than significant. This significant unavoidable traffic impact would occur with implementation of Alternative 2A, Alternative 1B, and Alternative 1A, but the No Project/No Federal Action Alternative would not include Coast Highway 101 bridge construction or retrofitting activities.

Air Quality

Under CEQA, significant and unavoidable temporary construction-related air quality impacts would result during construction activities associated with Alternative 2A, Alternative 1B, and Alternative 1A. Construction-generated ROG and NO_X emissions for all three alternatives would exceed applicable mass emission thresholds, resulting in a significant impact to regional air quality. Feasible mitigation is included but would not reduce the impact to less than significant.

Additionally, Alternative 2A would cause significant and unavoidable operation-related air quality impacts. NO_X emissions associated with maintenance activities under Alternative 2A would exceed the applicable mass emission thresholds, resulting in a significant impact to regional air quality. Feasible mitigation is included but would not reduce the impact to less than significant.

Noise

Due to nighttime dredging and materials placement activities, significant impacts have been identified under CEQA for each of the alternatives due to lagoon restoration activities and materials disposal/reuse activities associated with SELRP. Design features have been incorporated into the project to minimize equipment noise during construction at nearby residences, including housing exposed engines and ensuring equipment has effective mufflers. At materials placement sites, construction would be limited to 3 consecutive nights within a distance that could disturb sleep at a given residence (100 feet). Even with implementation of these measures nighttime construction outside of allowed hours would result in significant impacts. Mitigation such as noise walls and limiting dredging and materials placement activities to daytime hours was considered to reduce this impact but found infeasible.

Global Climate Change and Greenhouse Gas Emissions

Under CEQA, significant GHG emissions would result during construction operations under Alternative 2A, Alternative 1B, and Alternative 1A. Climate change and GHG emissions are a cumulative impact and therefore emissions associated with individual project components of lagoon restoration and materials disposal/reuse must be evaluated together. Emissions would result from construction activities including mobilization/demobilization, site preparation, construction equipment and on-road vehicles, dredging, and materials disposal. The emissions estimated would exceed the County significance guidelines threshold of 2,500 MT CO_2e per year under Alternative 2A, Alternative 1B, and Alternative 1A. No mitigation measures are available to reduce emissions to less than significant.

4.3.2 COMPARISON OF ALTERNATIVES

Alternative 2A includes the largest amount of dredging and material removal for lagoon restoration, thus also requiring the largest volume of material disposal. Additionally, Alternative 2A includes the construction of a new Coast Highway 101 bridge and a new inlet and associated CBFs. These additional activities result in derivative effects such as a higher volume of truck trips, increased areas of disturbance, longer construction durations, and higher noise levels, among others, as compared to the other alternatives. Thus, the degree of adverse impact for Alternative 2A, relative to the other project alternatives that do not include the high volume of dredging or other additional elements, is typically higher for almost all issue areas. Alternative 2A would cause a long-term significant visual impact due to the new inlet/CBFs that would not occur under the other alternatives. Hazardous materials/public safety impacts are considered significant and would require mitigation due to construction of a new inlet under Alternative 2A to reduce impacts to below a level of significance. Construction of a new Coast Highway 101

bridge under Alternative 2A would require mitiation to reduce potential unstable geologic conditions. Ongoing maintenance activities would result in significant air quality impacts with implementation of Alternative 2A. The other project alternatives were found to have less than significant air quality impacts associated with ongoing maintenance. Coast Highway 101 bridge construction under Alternative 2A has the potential for impacts to unknown cultural resources and requires specific CEQA mitigation in addition to mitigation described below for the other alternatives.

Alternative 1B typically has similar impacts to Alternative 2A, except as described above due to additional project elements associated only with Alternative 2A. Alternative 1B proposes removal of 1.2 mcy of material as compared to Alternative 2A, which proposes 1.4 mcy; thus, impacts associated with dredging operations and materials placement are fairly similar for these two alternatives. Alternative 1B would result in a short-term significant unmitigable visual impact during lagoon restoration activities, as would Alternative 2A. This impact would be substantially adverse.

Alternative 1A includes approximately 160,000 cy, which is substantially less dredging than Alternative 2A and Alternative 1B. This reduces the amount and degree of severity of impacts that result from Alternative 1A, relative to the other two alternatives for both lagoon restoration and materials disposal/reuse. Significant and unavoidable short-term noise impacts to sensitive bird species would occur as a result of construction activities under Alternative 2A, Alternative 1B, and Alternative 1A. Alternative 2A would have the most substantial impact as it includes the highest volume of dredging. Alternative 1A would have the least substantial impact due to the relative decrease in volume, footprint, and duration of dredging. Alternative 2A, Alternative 1B, and Alternative 1A require CEQA mitigation for potential water quality impacts from turbidity generated during dredging operations. Alternative 2A, Alternative 1B, and Alternative 1A would result in significant unavoidable adverse air quality impacts and GHG emissions during construction. Alternative 2A, Alternative 1B, and Alternative 1A require CEQA mitigation for potential impacts to buried human remains and inadvertent disturbance of cultural resources. Paleontological impacts could result from grading in sensitive formations and require CEQA mitigation under Alternative 2A, Alternative 1B, and Alternative 1A. Temporary traffic impacts associated with Coast Highway 101 bridge construction or retrofitting would be significant under all three alternatives. Alternative 2A, Alternative 1B, and Alternative 1A would have the potential to create a public health hazard from unknown contamination of dredged/excavated material, though Alternative 1A would have the lowest potential for this impact due to the limited amount of dredging proposed. Alternative 1A would not result in adverse or significant impacts to visual resources but Alternative 2A and Alternative 1B would.

However, the high volume of dredging associated with Alternative 2A and Alternative 1B would also increase the beneficial impacts of the proposed project, such as improved tidal flow and healthier lagoon habitats. With reduced dredging, as proposed under Alternative 1A, the positive impacts, such as increased tidal flow and improved lagoon habitats that are associated with Alternative 2A and Alternative 1B, would not occur to the same degree. Because no onshore material placement would occur, the beneficial impacts associated with the beach nourishment, including reduced risk to coastal structures and a visually enhanced sandy beach, would not occur under Alternative 1A.

The No Project/No Federal Action Alternative would not modify existing conditions and no actions would take place. Thus, no significant environmental impacts would occur from this alternative. However, the lagoon would continue to deteriorate in habitat quality and hydrologic conditions if the SELRP is not completed. While no significant adverse impacts would occur, none of the beneficial or positive impacts that occur with implementation of one of the project alternatives would result under the No Project/No Federal Action Alternative.

The project is a restoration effort and has many proactive design features specifically included to minimize or reduce the potential for adverse effects to result from project implementation. In addition, mitigation has been proposed for substantial adverse impacts or impacts that were identified as significant. In some cases, such as cultural resources, geology and soils, water and aquatic sediment quality, air quality, and hazardous materials and public safety, the proposed mitigation was found to be adequate to reduce the adverse effect and result in less than significant impacts. However, for the resource areas of biological resources; visual (Alternative 2A and Alternative 1B only); traffic, access, and circulation; noise; air quality; and GHG, the proposed mitigation would provide for some reduction of impact but would not fully reduce the impact to a level considered less than significant.

4.4 ENVIRONMENTALLY PREFERRED AND SUPERIOR ALTERNATIVE

CEQA

CEQA requires disclosure of the environmentally superior alternative and, if the No Project/No Federal Action Alternative is environmentally superior, identification of a superior alternative among the other alternatives (Section 15126.6[e][2]).

Among the action alternatives (Alternative 2A, Alternative 1B, and Alternative 1A), Alternative 1A would result in the least CEQA significant environmental impacts as shown in Table 4-1. Alternative 1A would not result in the significant and unavoidable visual impact that would result from the other two alternatives. Additionally, Alternative 1A would not have a significant

impact on air quality requiring mitigation. Because of the reduced dredging activity, reduced construction time, and least amount of disturbance to the lagoon setting relative to the other alternatives, many of the impacts that would result from Alternative 1A would also be to a lesser degree and extent than those resulting from Alternative 2A and Alternative 1B. However, the beneficial environmental impacts from Alternative 1A would also be less than for the other alternatives, such as reduced improvements to lagoon hydrologic function and drainage patterns, fewer enhanced habitat and biological benefits, and no beach material replenishment. As a result of the minimized dredging and reduced benefits, Alternative 1A does not achieve the CEQA project objectives, as listed in Section 1.2, to the fullest extent or to the same level as the other action alternatives. Most specifically, Alternative 1A does not achieve the following objectives: (1) physical restoration of lagoon estuarine hydrologic functions and (2) biological restoration of habitat and species within the lagoon to the same extent as the other alternatives.

NEPA

Section 1505.2(b) of the CEQ Regulations requires NEPA lead agencies to identify the "environmentally preferable alternative" at the time of making a decision on the project. The NEPA purpose of the proposed project is to enhance and restore the physical and biological functions and services of San Elijo Lagoon by increasing the tidal prism to support a diverse range of native intertidal and transitional habitats.

Alternative 2A would meet the NEPA purpose of the project as it would increase the tidal prism and result in enhanced lagoon function and high-quality intertidal and transitional habitats. Habitat distributions under Alternative 2A would be an increase in open water areas/tidal channels and mudflat habitat within the lagoon compared to existing conditions. Open water areas and tidal channels would be increased in all three lagoon basins compared to existing conditions. Mudflat and open water/tidal channels would be actively created throughout the central basin and would replace existing mid-marsh and low-marsh habitat. Similarly, open water/tidal channels and low-marsh would be actively created in the east basin where freshwater/brackish marsh currently exists. This alternative also includes the creation of 12 acres of transitional habitat in the east and central basins. Substantial adverse impacts would result with implementation of this alternative.

Alternative 1B would meet the NEPA purpose of the project as it would create a greater diversity of habitats relative to existing conditions through modifications to channels and habitat areas within the lagoon. Alternative 1B would result in an increase in open water/tidal channels, low-marsh, mudflat, and created transitional habitat compared to existing conditions. Most of the increase in open water/tidal channels and mudflat habitat would occur in the central and east basins, and would result in a corresponding decrease in mid-marsh, saltpan, and freshwater/brackish marsh habitats. This alternative includes the creation of 15 acres of

transitional habitat in both the east and central basins. Substantial adverse impacts would result with implementation of this alternative.

Alternative 1A would not meet the NEPA project purpose as the tidal prism would be only slightly increased compared to existing conditions. Existing habitat areas would essentially remain intact, although some freshwater habitat areas in the east basin are anticipated to convert to more saltwater-based communities due to enhanced tidal influence and the resulting changes in inundation frequencies. The main feeder channel throughout the site would be enlarged and redirected just west of I-5. The main tidal channel would be extended farther into the east basin, and existing constricted channel connections would be cleared and enlarged. Two new channels through the CDFW dike would be created to allow tidal and fluvial connections. One small area of transitional habitat would be constructed in the northwest portion of the central basin. With implementation of Alternative 1A, the project would result in improved hydrologic function but would not reverse the continued loss of mudflat and rapid increase in salt marsh occurring under existing conditions. For these reasons, Alternative 1A would not meet the NEPA purpose.